

Abstract of the Invention

A system to detect the presence or absence of T wave alternans is described based on statistical tests and periodicity transform. T wave and ST segment boundaries are detected in multi-lead ECG signals acquired from the regular clinical leads. Once the fiducial point and the above boundaries are delineated, computation of regular parameters like T wave amplitude, area under the T waves or segments of T wave, ST segment slope and/or the curvature of T wave are performed. Each parameter forms a rolling array of values with each successive beat. The array of values, or the time series, is used to make the decision about the T wave alternans.

Two different methods are employed based on periodicity transforms and statistical tests. A set of numerical values (e.g. norm of the projection on to p-2 space, sums of adjacent terms after the trend removal, t-value, and number of deviations from alternans pattern) are all computed and compared to threshold values. Threshold values are computed from past information and experience with clinical databases and simulations. Final system comprises a software module, which can be part of the existing ECG monitoring programs as well as external defibrillator modules, apart from being stand-alone algorithms.

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